

REMARKS

In the Office Action, dated March 28, 2003, the Examiner states that Claims 14-48 are pending, Claims 14-29 are rejected, and Claims 30-48 are objected to. By the present Amendment, Applicant amends the claims.

In the Office Action, Claims 14-48 are objected to for minor informalities found in Claims 14 and 16. The Applicant has attended to these informalities as the Examiner suggested.

In the Office Action, the Patent Office rejects Claims 14-23 and 27-29 under 35 USC §103(a) as unpatentable over Chollet et al. (US 4,982,671) in view of Bishop (US 5,730,064). Claims 24-26 are rejected in further view of Hase (EP 945 327 A2). The Applicant respectfully disagrees with and traverses these rejections.

The present invention can be used on small vehicles having a relatively small wheelbase and turning radius. To the contrary, Chollet can only be used on a track or guideway having a relatively very large turning radius.

The present invention is directed to "a vehicle with at least one steerable wheelset". This means that within the scope of the broad claim there is claimed a vehicle in which a single wheelset is independently steerable with respect to the vehicle body. Whereas Chollet describes "two bogies" each installed at opposite ends of a vehicle, in which the axles of each bogie are steered relative to each other and not with respect to the body of the vehicle. The axles are steered relative to each other by actuators that interconnect them.

There is a substantial difference between a wheelset independently steerable with respect to a vehicle as is claimed in the present invention, and having bogies at each end of the vehicle, such as is the case with Chollet. This substantial difference is a dominant factor influencing the suitability of a steering mechanism. The rate of change of curvature experienced by two wheelsets during entry to a relatively small radius curve as intended by the wheelset of the present invention, is orders of magnitude different to that suited to a vehicle having bogies at each end of its body (or carriage) as in Chollet. Side-slip at either of the two axles (wheelsets), which occurs when going through a small turning radius would cause flange contact

between the wheels and the guideway (rails), unless the bogie (or wheelset) were independently "steered in" with respect to the vehicle.

A further factor in the practicality of the claimed present invention is the dihedral (inclined) arrangement of the axles, which are essential to the steering operation. The entering of curves of a very small radius with respect to the wheelbase of the vehicle demands very high lateral forces at the wheel contacts which far exceeds those provided by normal wheel to rail contact. It is therefore essential to increase such side forces by inclining the axles of the wheels downwardly so that, as a vehicle enters the corner, the transfer of load to the outer wheel at each wheelset has a large lateral vector force over and above that which can be provided by superelevation. Such forces are even greater because of the yaw accelerations involved in the entry to a small radius curve. However none of these considerations is pertinent in the case of the vehicle that Chollet addresses.

While Bishop (US5730064) discloses dihedral (inclined) axles, they are principally used to steer the vehicle, whereas in the present invention, they have no such function. The magnitude of the forces required to steer the vehicle of Bishop is more than adequate, which is not the case in the present invention. Since the inclined axles in Bishop are used for a different function than that used in the present invention, it would not have been obvious to combine Chollet and Bishop to achieve the presently claimed invention. Since Chollet teaches a wheelset which is not usable for a small turning radius, and Bishop teaches the use of dihedral axles having a different function. There is no teaching, suggestion or motivation disclosed in either reference to use the dihedral axles of Bishop in a functionally different way with the wheelset of Chollet to arrive at the wheelset of the claimed present invention usable for achieving a small turning radius.

Claims 24-26 are dependent upon Claims 14-16, and are considered novel for the same reasons discussed above.

In light of the foregoing response, all the outstanding objections and rejections have been overcome. Applicant respectfully submits that this application should now be in better condition for allowance and respectfully requests favorable consideration.

Respectfully submitted,

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Date

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